

1/21

FIG. 1

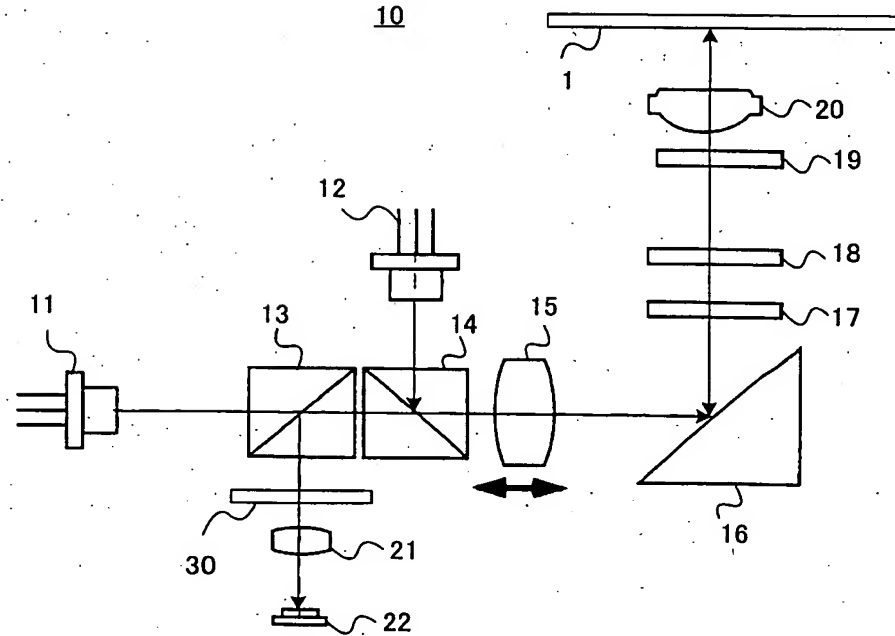
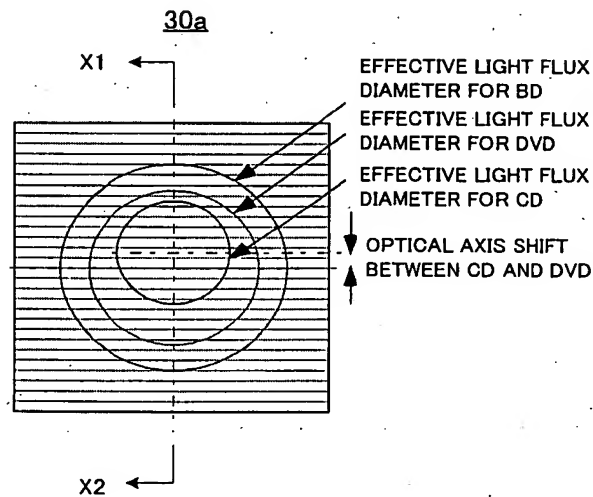


FIG. 2



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2/21

FIG. 3A

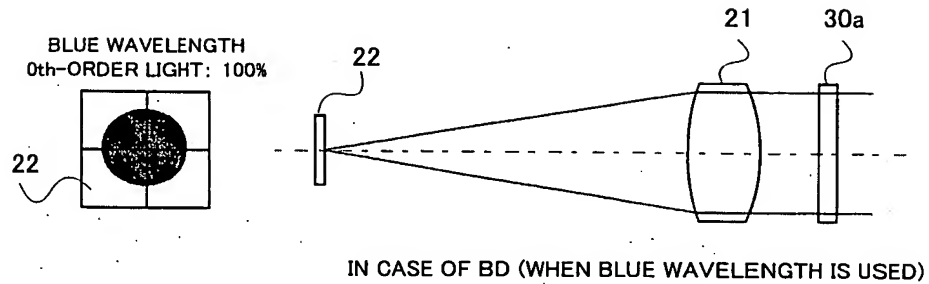


FIG. 3B

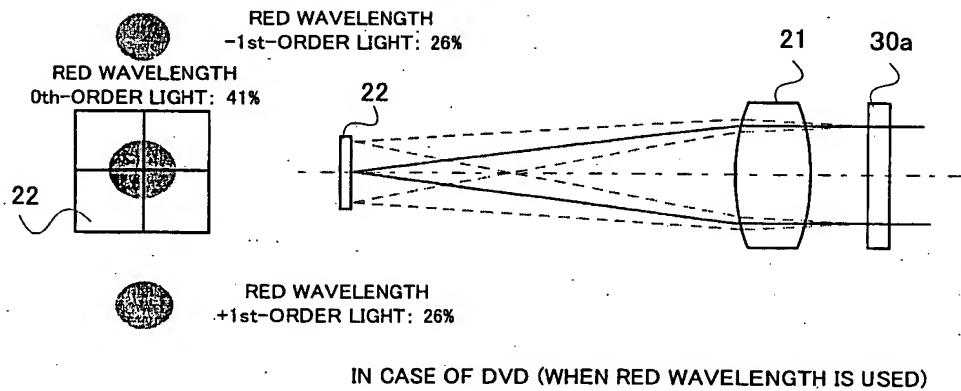
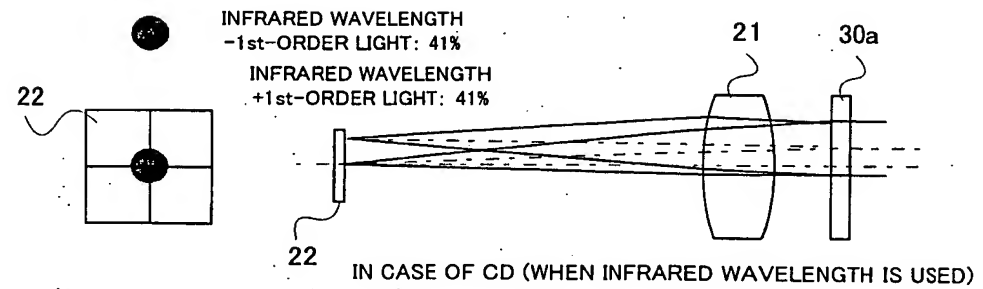
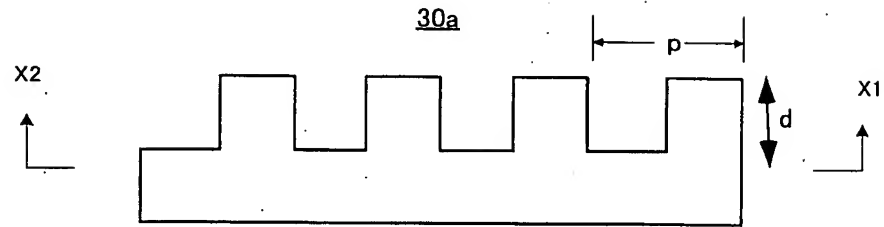


FIG. 3C



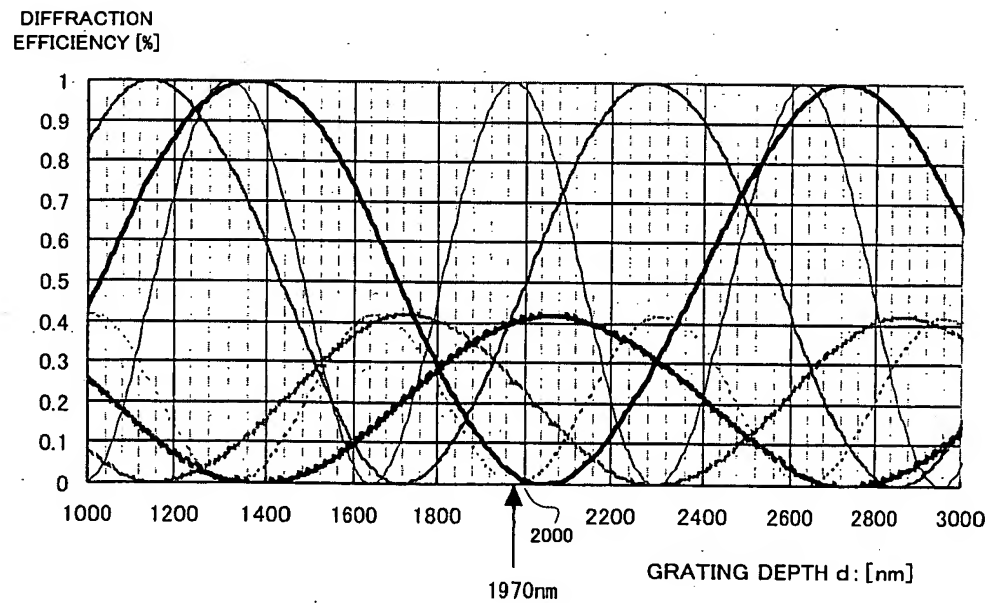
3/21

FIG. 4A



	DIFFRACTION EFFICIENCY [%]		GRATING DEPTH D[ $\lambda$ ]
	0th-ORDER LIGHT	$\pm$ 1st-ORDER LIGHT	
BLUE (405nm)	100	0	3
RED (660nm)	41	26	1.89
INFRARED (780nm)	3	41	1.60

FIG. 4B



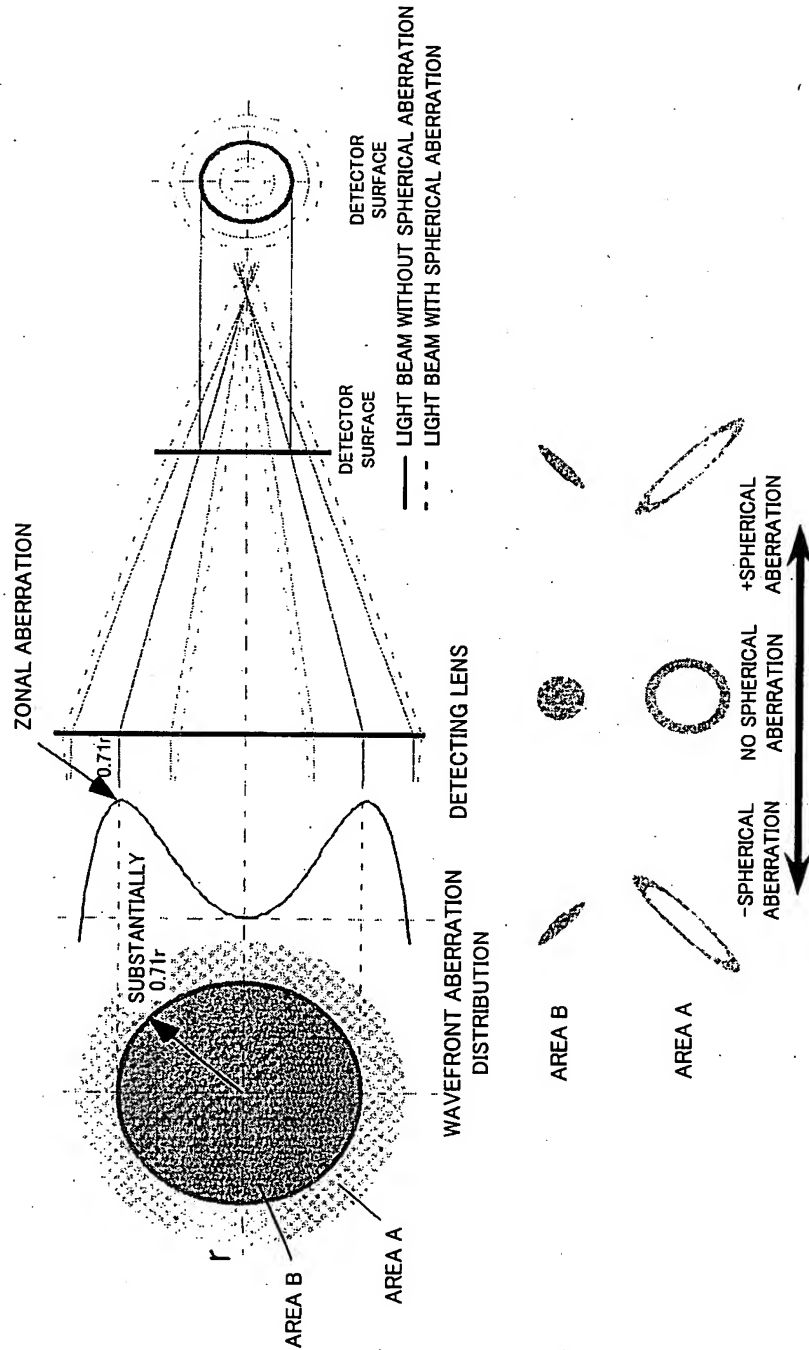
REFRACTIVE INDEX:

n405 : 1.619  
 n660 : 1.580  
 n780 : 1.574

—	405nm 0th-ORDER LIGHT
.....	660nm 0th-ORDER LIGHT
—	780nm 0th-ORDER LIGHT
- - - -	405nm 1st-ORDER LIGHT
—	660nm 1st-ORDER LIGHT
- - - -	780nm 1st-ORDER LIGHT

4/21

FIG. 5



5/21

FIG. 6

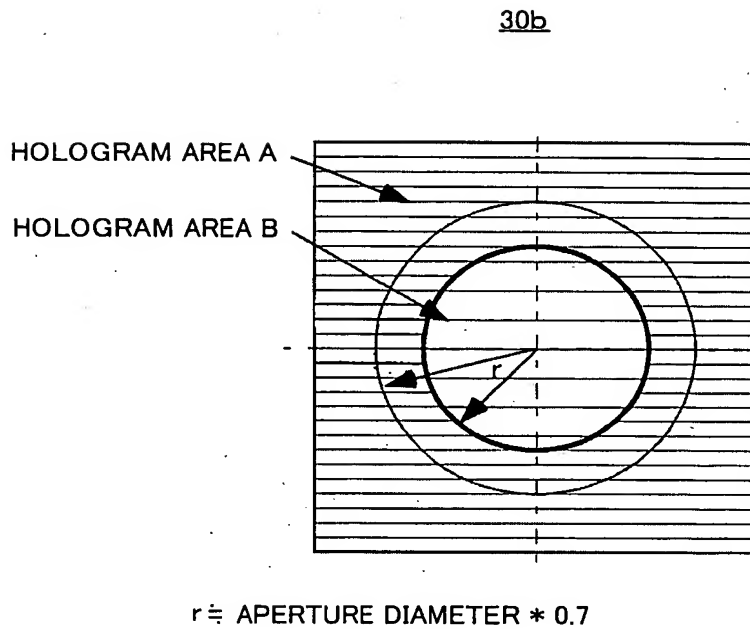
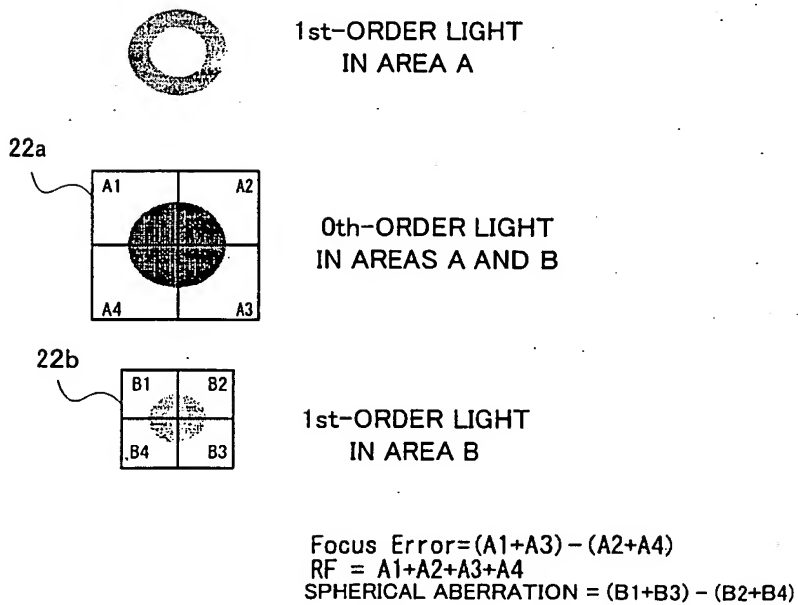


FIG. 7



6/21

FIG. 8

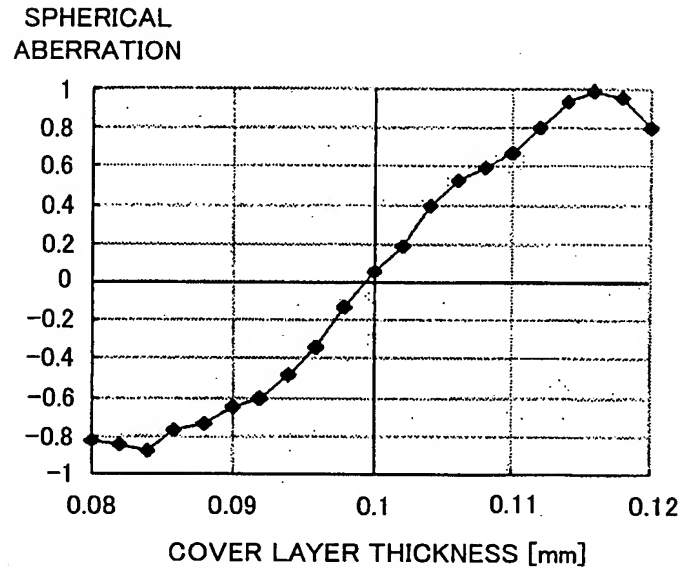


FIG. 9

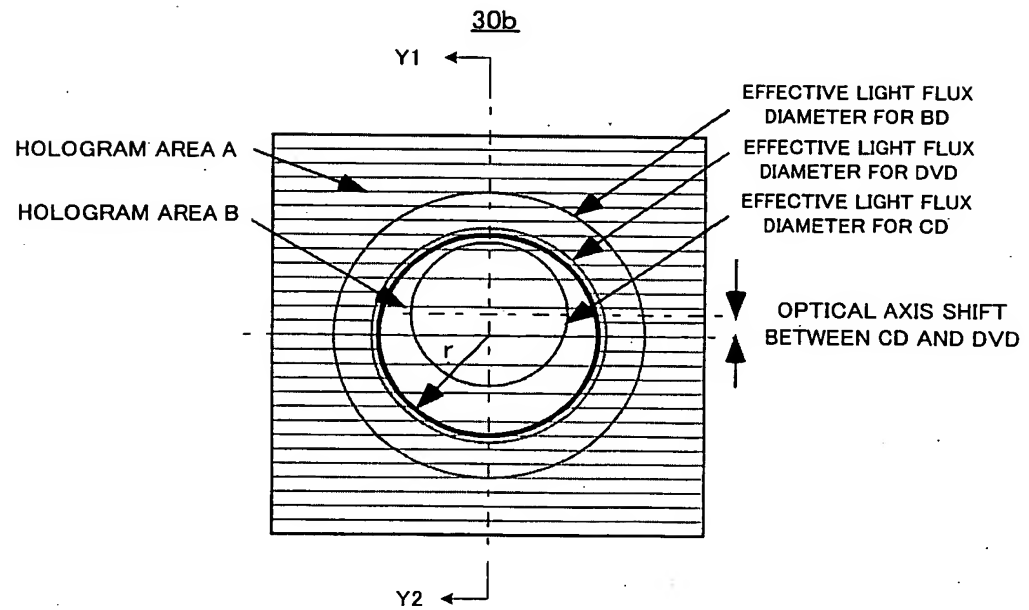


Figure 1 is a schematic diagram of the optical system. It shows a light beam (22) passing through a lens (21) and a detector (30b). The diagram is labeled "IN CASE OF BD (WHEN BLUE WAVELENGTH IS USED)".

The diagram includes the following labels and components:

- LIGHT BEAM IN AREA A**: Points to the circular light beam (22a) in the top left.
- 22a**: Label for the circular light beam in Area A.
- 22b**: Label for the square detector in Area A.
- LIGHT BEAM IN AREA B**: Points to the circular light beam (22b) in the bottom left.
- 22**: Label for the light beam entering the lens.
- 21**: Label for the lens.
- 30b**: Label for the detector.
- BLUE WAVELENGTH 0th-ORDER LIGHT: 90%**: Text describing the light beam.
- BLUE WAVELENGTH 1st-ORDER LIGHT: 5%**: Text describing the light beam.
- IN CASE OF BD (WHEN BLUE WAVELENGTH IS USED)**: Text at the bottom of the diagram.

22a

22b

22

21

30b

RED WAVELENGTH  
0th-ORDER LIGHT: 93%

IN CASE OF DVD (WHEN RED WAVELENGTH IS USED)

22a

22b

22

21

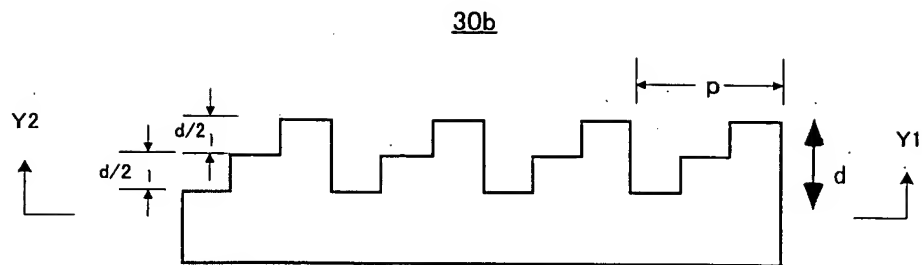
30b

INFRARED WAVELENGTH  
1st-ORDER LIGHT: 62%

IN CASE OF CD (WHEN INFRARED WAVELENGTH IS USED)

8/21

FIG. 11

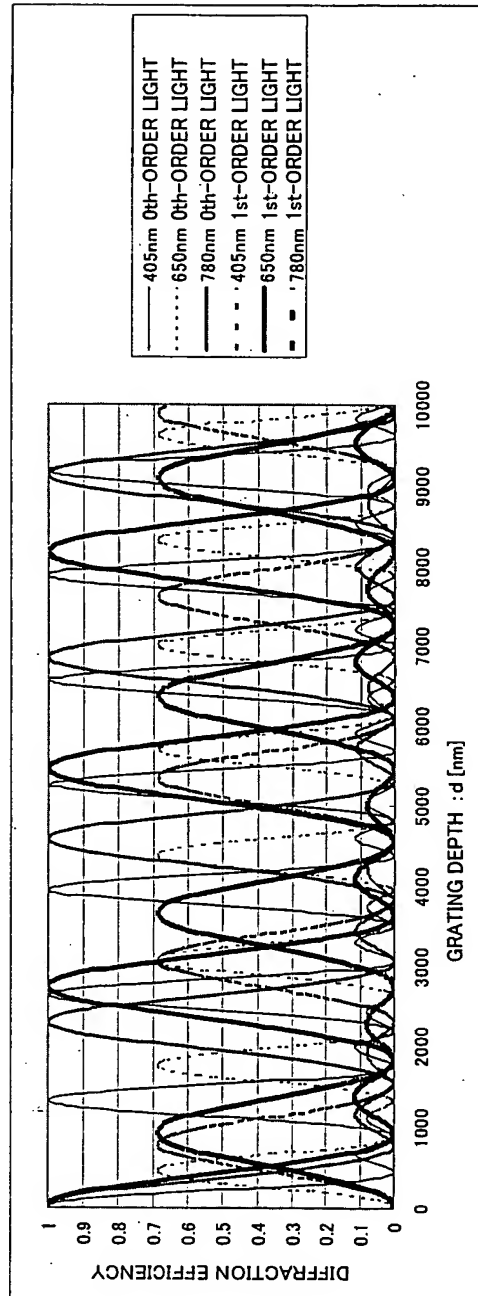


	DIFFRACTION EFFICIENCY [%]		GRATING DEPTH
	0th-ORDER LIGHT	1st-ORDER LIGHT	D [ $\lambda$ ]
BLUE (405nm)	90	5	14.1
RED (660nm)	93	3	8.1
INFRARED (780nm)	4	62	6.8



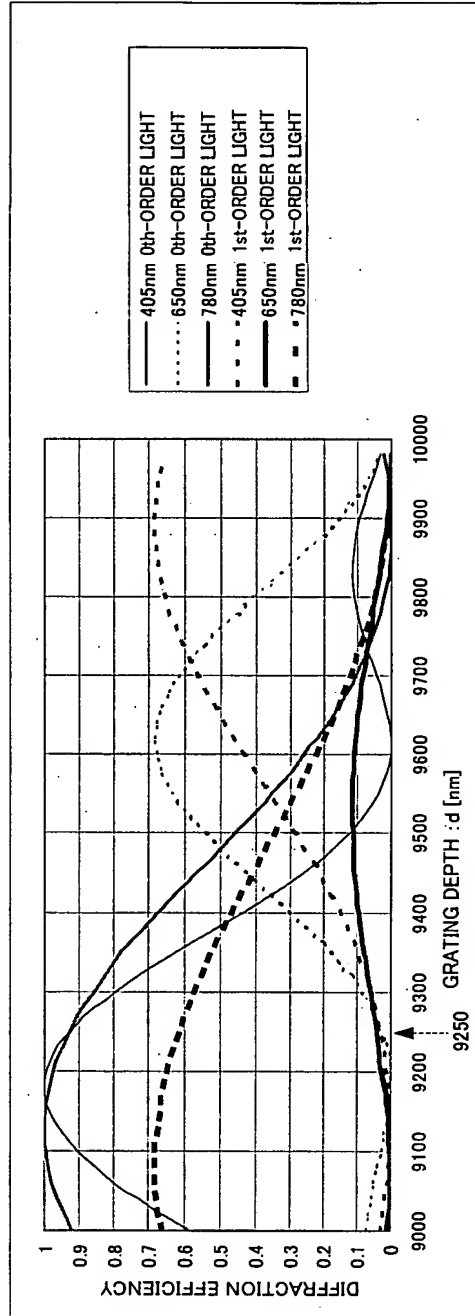
9/21

FIG. 12A



10/21

FIG. 12B



11/21

FIG. 13A

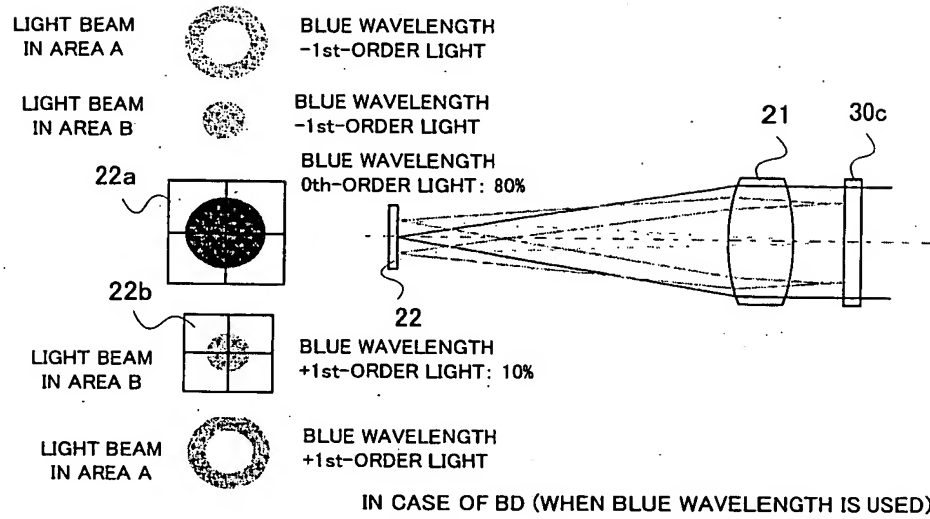


FIG. 13B

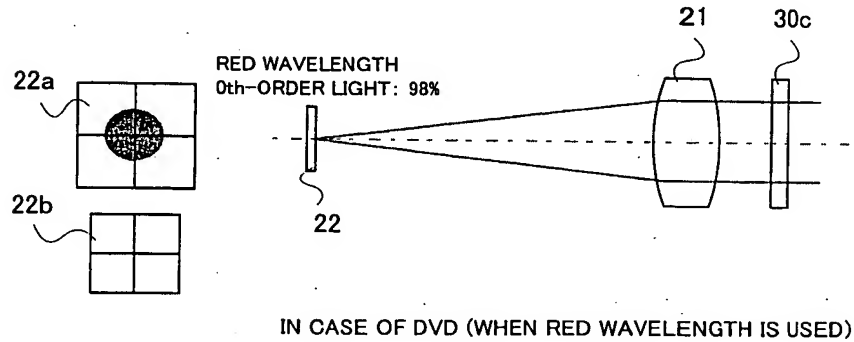
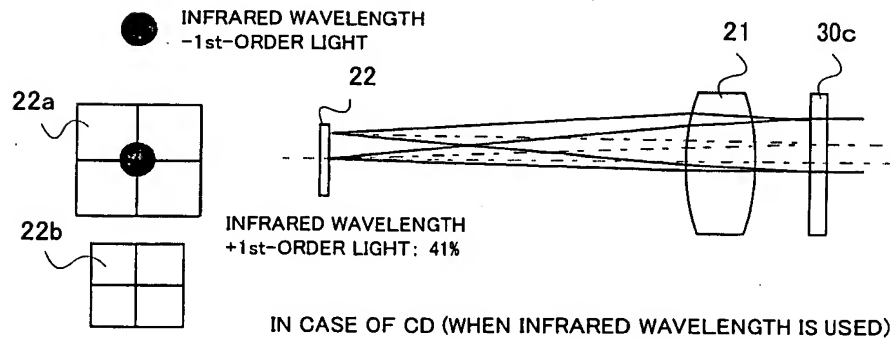
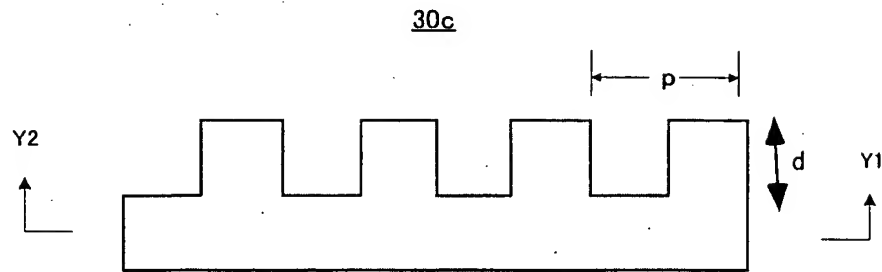


FIG. 13C



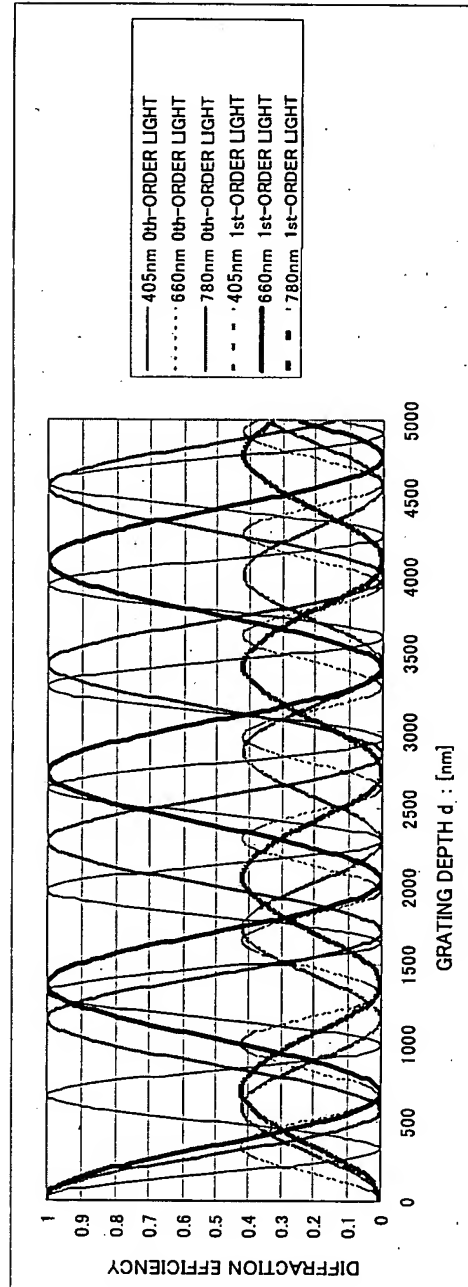
12/21

FIG. 14



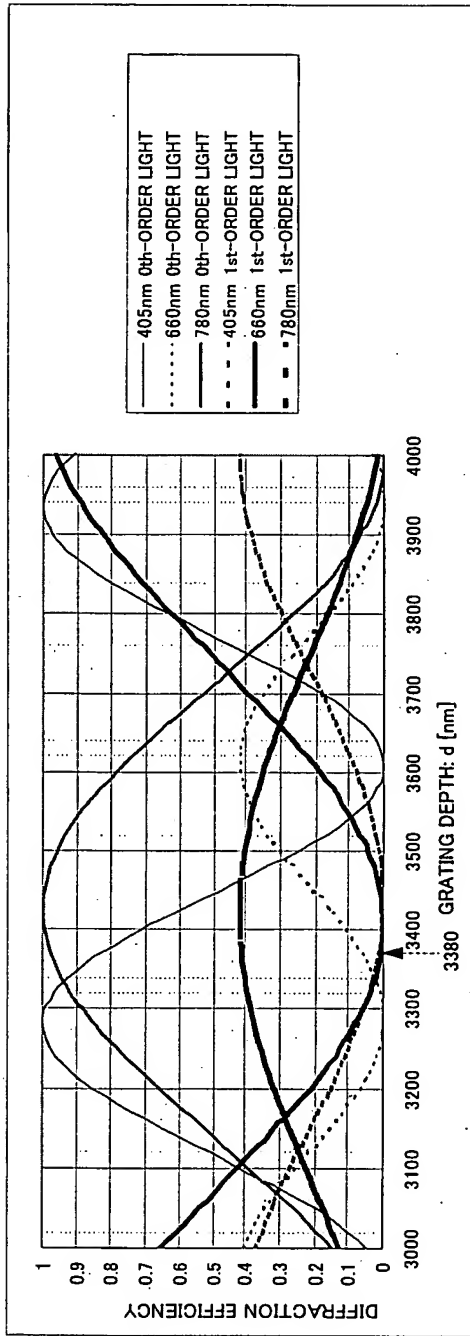
	DIFFRACTION EFFICIENCY [%]		GRATING DEPTH D [ $\lambda$ ]
	0th-ORDER LIGHT	$\pm$ 1st-ORDER LIGHT	
BLUE (405nm)	80	10	5.2
RED (660nm)	98	1	3
INFRARED (780nm)	2	41	2.5

FIG. 15A



14/21

FIG. 15B



15/21

FIG. 16A

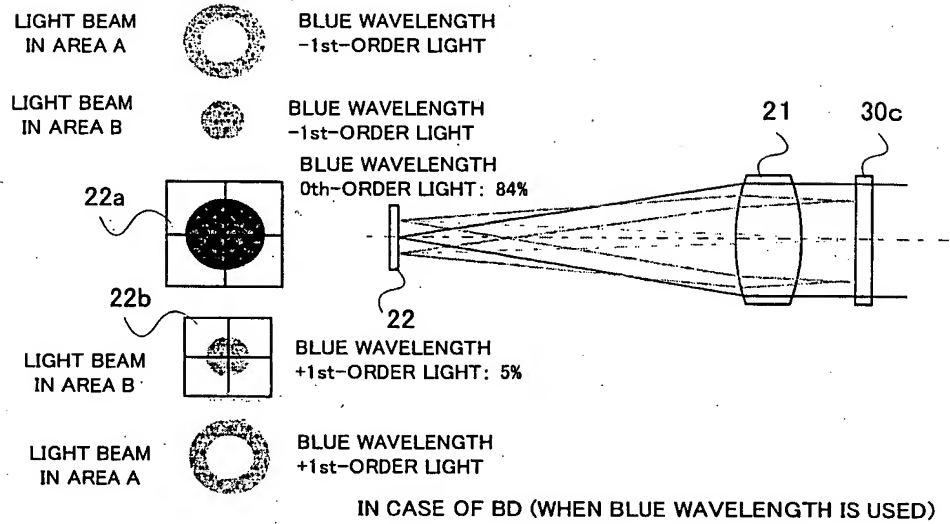


FIG. 16B

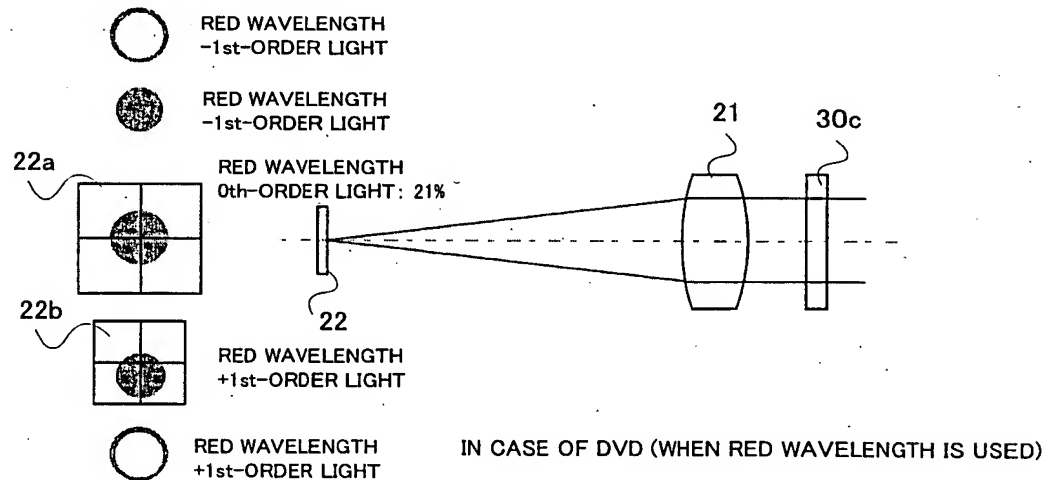
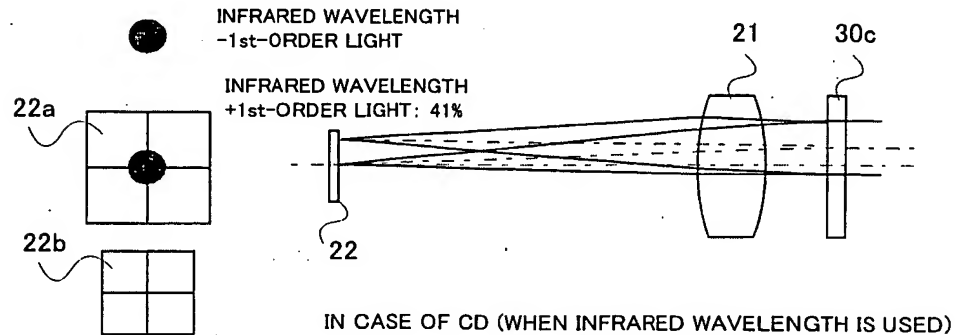
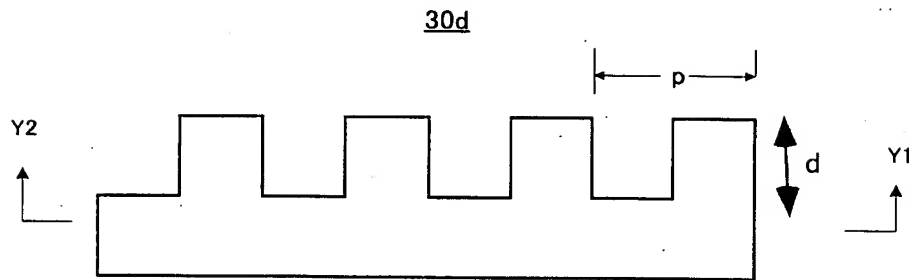


FIG. 16C



16/21

FIG. 17

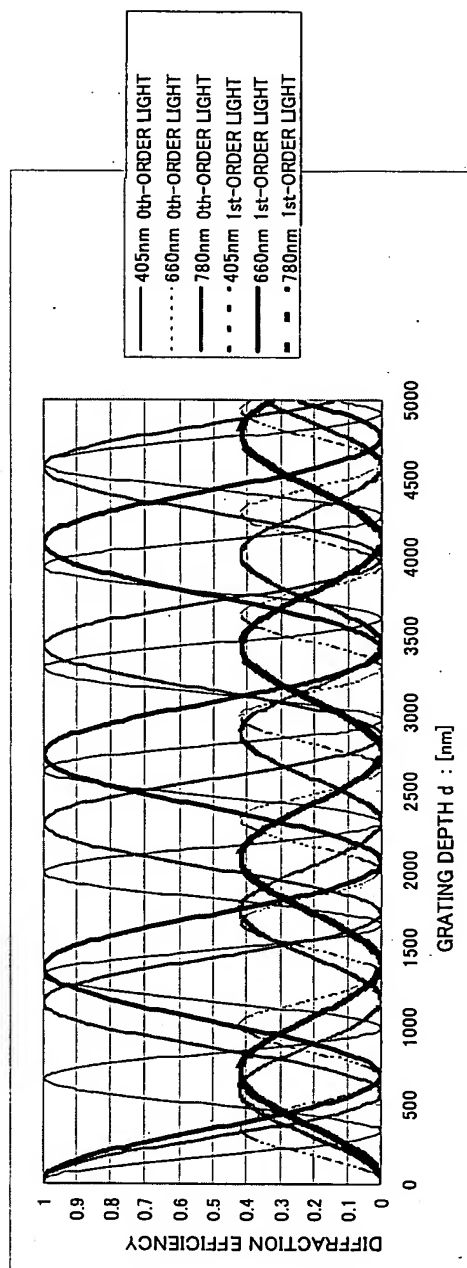


	DIFFRACTION EFFICIENCY [%]		GRATING DEPTH D [ $\lambda$ ]
	0th-ORDER LIGHT	$\pm$ 1st-ORDER LIGHT	
BLUE (405nm)	84	5	1.1
RED (660nm)	21	33	0.66
INFRARED (780nm)	2	41	0.55



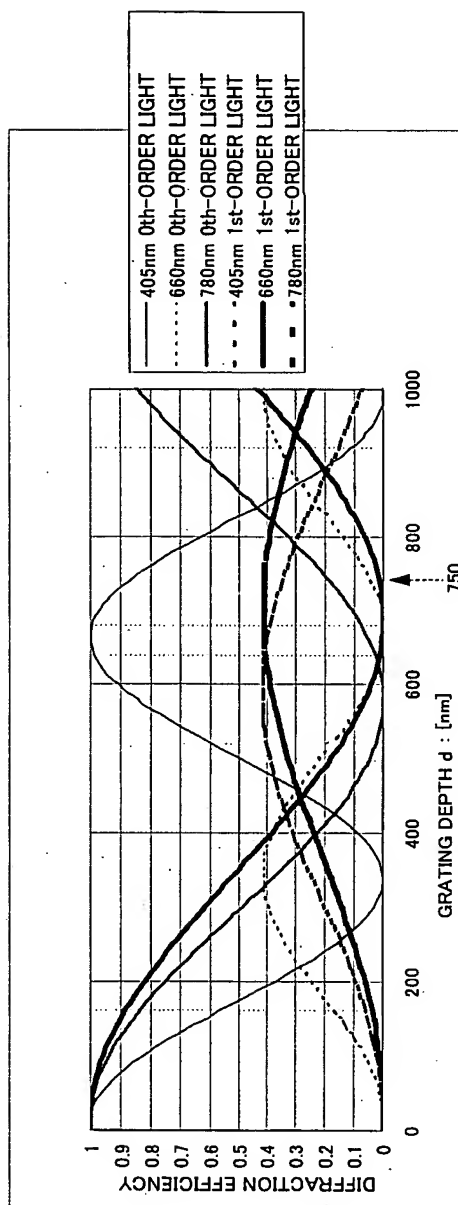
17/21

FIG. 18A



18/21

FIG. 18B



19/21

FIG. 19A

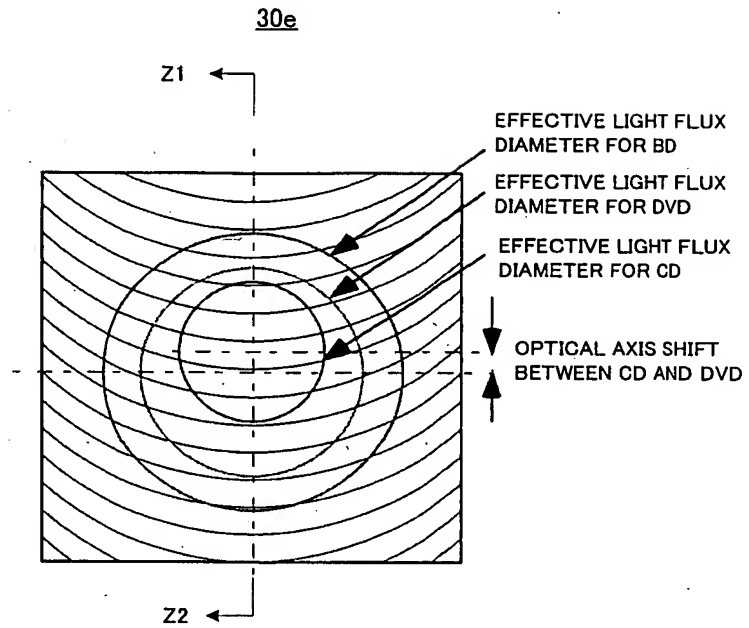
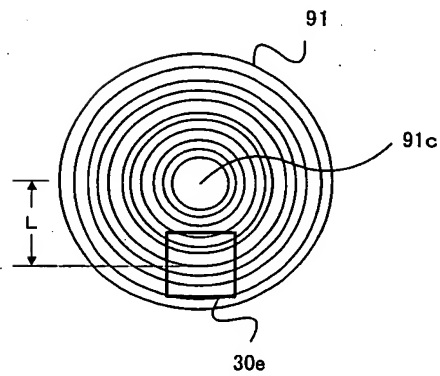


FIG. 19B



20/21

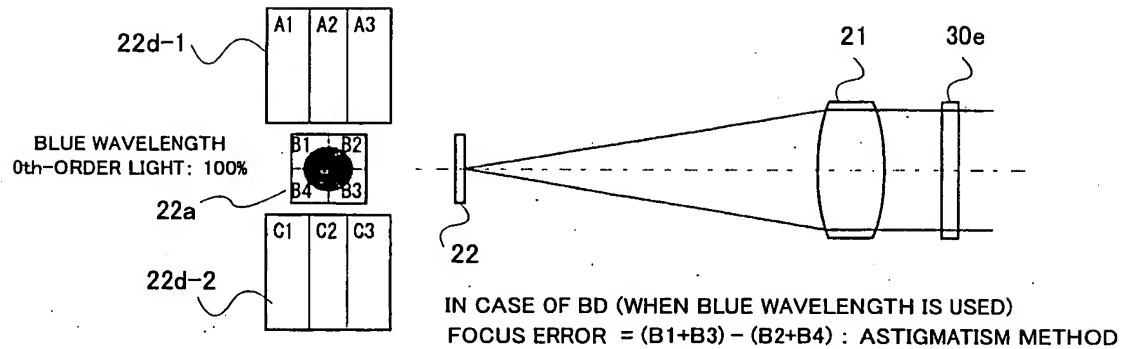


FIG. 20A

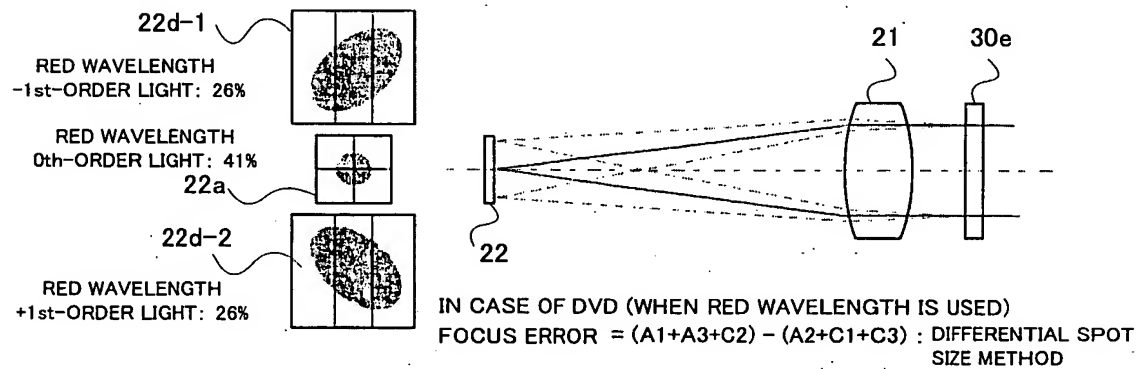


FIG. 20B

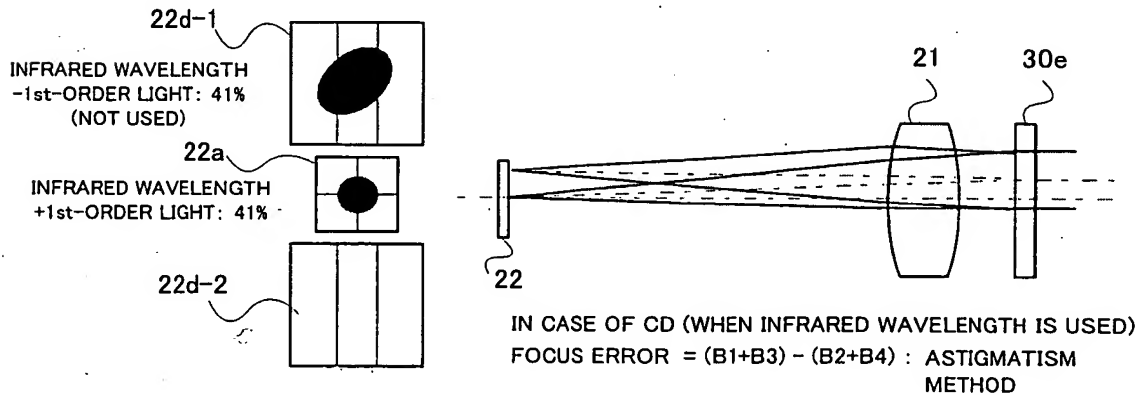
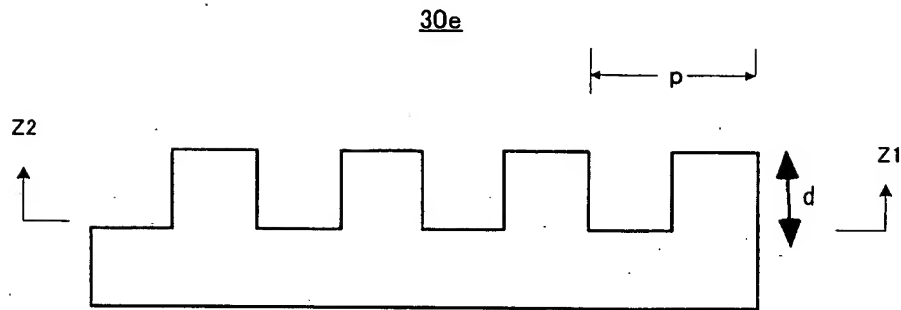


FIG. 20C

21/21

FIG. 21



	DIFFRACTION EFFICIENCY [%]		GRATING DEPTH D [ $\lambda$ ]
	0th-ORDER LIGHT	$\pm$ 1st-ORDER LIGHT	
BLUE (405nm)	100	0	3
RED (660nm)	41	26	1.89
INFRARED (780nm)	3	41	1.60

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